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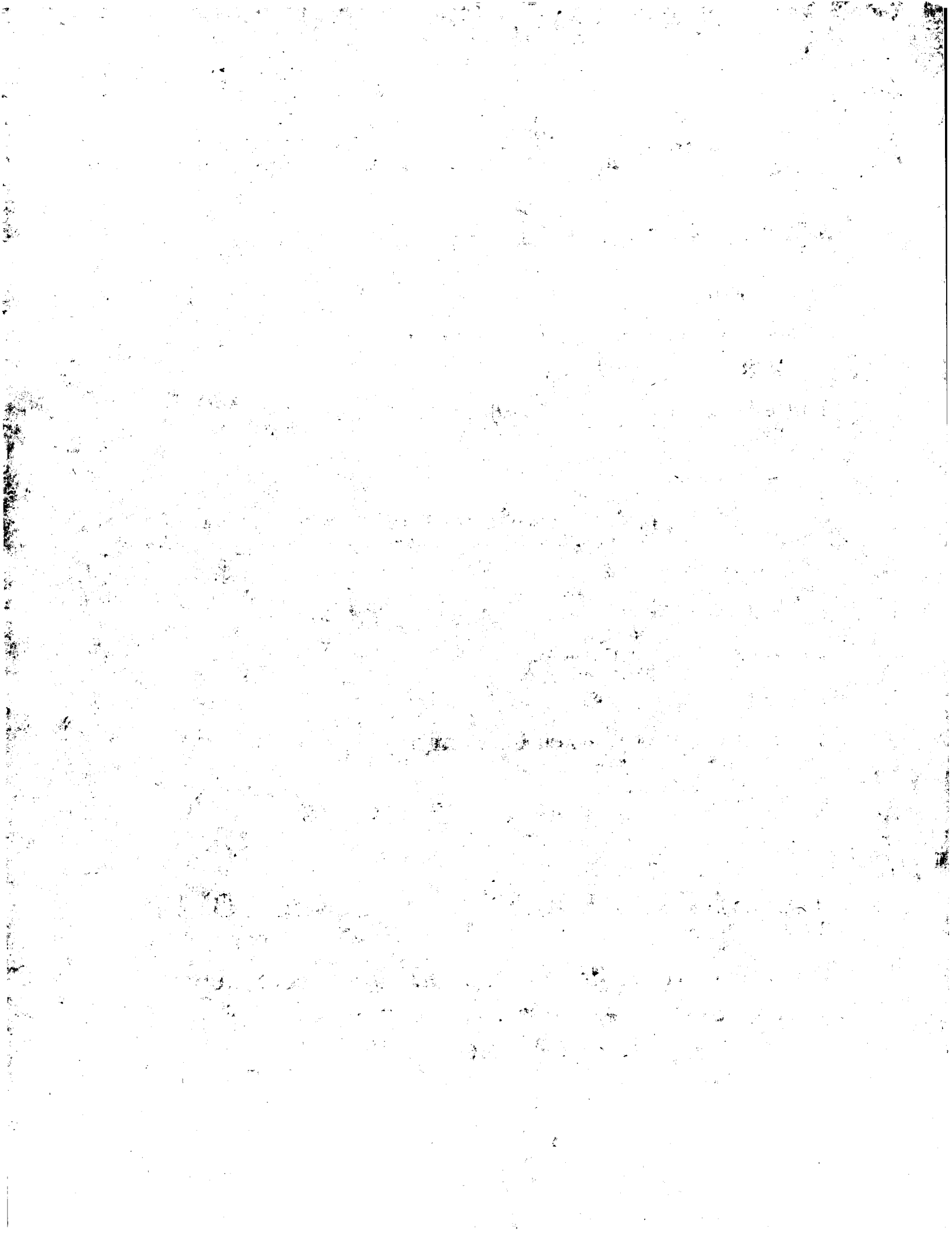
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## PATENT SPECIFICATION



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458,443

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No. 17880/35.

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## COMPLETE SPECIFICATION

### Improvements in and relating to Paste Applying Mechanism, particularly for Cigarette Making Machines

We, AMERICAN MACHINE & FOUNDRY COMPANY, a corporation organised and existing under the laws of the State of New Jersey, United States of America, of 5 511, Fifth Avenue, City and State of New York, United States of America, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to paste applying mechanism, particularly for cigarette making machines.

15 To permit the proper operation of pasting mechanisms for cigarette making machines operating at high speeds, it has been found desirable to make use of the gear-pump principle according to which 20 the paste is received in definite amounts from a paste reservoir or receptacle and delivered under pressure through a nozzle to the cigarette paper strip of a traveling cigarette rod. In the specification of our 25 patent No. 429,134 there is described a construction utilizing this gear-pump principle in which there have been provided a pair of intermeshing paste delivery gears coacting to deliver paste 30 to the nozzle, and a pair of intermeshing paste pick-up gears which receive paste between their teeth from the reservoir and deliver the paste to the spaces between the teeth of the delivery gears in order to 35 insure their filling without the formation of air holes or pockets. Furthermore, whatever amount of paste was once caught between the teeth of the delivery gears, that very same amount was fed through 40 the nozzle and there was no way of controlling either its pressure or its flow.

The object of the present invention is to provide a paste applying mechanism suitable for various types of paste and for 45 different speeds of operation, in which the necessity for the extra set of paste pick-up gears is eliminated and a single set of gears is employed, while at the same time provision is made for insuring the 50 complete filling of the tooth spaces of the gears. Other objects of the invention are to provide for control of the pressure and flow of the paste in the nozzle, and to

provide for adjustment of the nozzle to vary the width of the stripe of paste 55 applied thereby.

The invention consists in a pasting mechanism, particularly for cigarette making machines, in which a pair of intermeshing gears receive paste through 60 an outlet of a paste reservoir and force the paste through an applying nozzle, and in which a rotary propellor is provided within the reservoir for forcing paste through the outlet directly into the spaces 65 between the teeth of the gears, to prevent the formation of cavities or empty spaces in the paste supplied to the nozzle.

The invention also consists in that the rotary propellor is provided with radial blades so inclined as to force the paste 70 through the outlet to the intermeshing gears.

The invention further consists in that the gears are arranged to deliver an over- 75 supply of paste into an orifice leading to the applying nozzle, and a relief valve, preferably adjustable, is provided in a by-pass leading from said orifice to the reservoir, to maintain a uniform pressure 80 of paste supplied to the nozzle.

The invention further consists in that the nozzle is provided with a delivery slot and is adjustable to change the position 85 of said slot to vary the width of the stripe of paste applied by the nozzle.

In the accompanying drawings which form a part of this specification and in which like characters of reference indicate the same or like parts:

Fig. 1 is a sectional side elevation of a paste applying mechanism constructed 90 according to the invention;

Fig. 2 is an end elevation of the mechanism looking toward the delivery 95 end thereof;

Fig. 3 is a plan view of the mechanism;

Fig. 4 is a detail sectional end elevation illustrating the pressure control means, 100 and

Fig. 5 is an end elevation of the feeding nozzle.

The paste applying mechanism consists of a paste reservoir 10 to the base 11 of which is secured a gear-housing 12, which 105 covers an outlet formed in the bottom of

the reservoir and is provided with a chamber 13 (Fig. 1). Within the chamber 13 of the gear-housing 12 is located a pair of gears 14 and 15 meshing with each other and operating on the gear pump principle, to receive paste within the tooth spaces from the outlet of the reservoir 10 and to deliver the paste under pressure through an orifice 16 in the housing 12 and a nozzle 17 to the overlap edge of the cigarette paper of a traveling cigarette rod C (Fig. 1). The orifice 16 is arranged adjacent the point at which the gear teeth move into mesh, to receive the paste as it is forced out from between the meshing teeth and to conduct it to the nozzle 17.

The gear 15 is secured to a horizontal idler shaft 18 supported in bearings in the base 11, and the gear 14 is mounted on a horizontal drive shaft 19 also supported by said base. On the shaft 19 is also mounted a helical gear 20 meshing with a helical gear 21 attached to a vertical shaft 22 journaled in bearings in the base 11. The upper portion of the shaft 22 extends into the paste reservoir 10 and carries a propellor 23 and an agitator 24 each provided with a plurality of blades. The blades of the propellor 23 are inclined as indicated in Fig. 1, so that they push the paste ahead of them and press it down into the teeth of the gears 13 and 14, so as to prevent the formation of cavities or empty spaces in the paste forwarded by the gears, even though viscous starch paste of jelly-like consistency is used. The blades of the agitator 24 may also be inclined and they serve the purpose of continuously stirring the mass of paste P in the reservoir 10. It should be understood that the agitator 24 may be omitted when less viscous paste is used.

The bore of the nozzle 17 communicates with the orifice 16 in the housing 12, and the nozzle is clamped against the housing by means of a forked clamp lever 25 pivoted in a pair of lugs 26 on the reservoir 10. The lever 25 at its upper end carries a thumb screw 27 engaging the reservoir and by means of which the lower forked end of the lever is pressed against the nozzle 17. In the outer end of the bore of the nozzle 17 is inserted a plug 17a having a narrow radial slot 28. By loosening the thumb screw 27, the nozzle 17 can be turned about its axis by means of a handle bar 29, to turn the slot 28 from a vertical position to a more or less inclined position, as indicated respectively by the full and dotted lines in Fig. 5, in order to vary the width of the stripe of paste applied to the traveling cigarette paper strip.

In order to control the pressure of the paste forced through the nozzle 17, the gears 14 and 15 are arranged to feed an oversupply of paste to the orifice 16, which is connected with the paste receptacle 10 by means of a by-pass 30. This by-pass is ordinarily closed by a ball-valve or other type of relief valve 31 (Fig. 4) under the pressure of a spring 32. The pressure of the spring against the valve can be regulated by means of an adjusting screw 33 so that the valve can be set to open when the pressure of the paste in the orifice exceeds a predetermined amount, thus permitting control of the pressure of the paste fed to the nozzle 17 in relation to variations in viscosity of different kinds of paste, to maintain a substantially uniform flow of the paste regardless of its consistency.

The amount of paste fed to the nozzle 17 can be regulated by means of a valve 34 located in the orifice 16. The valve may be turned by a handle bar 35, to vary the amount of paste supplied to the nozzle 17 in contradistinction to its pressure.

The gears 14 and 15 and shaft 22 are driven by means of a shaft 36 suitably coupled to the drive shaft 19 and provided with a gear 37 (Fig. 1) driven from the main drive of the cigarette making machine.

While, as mentioned above, the pasting mechanism may feed starch paste of a highly viscous nature, it is also suited for the feeding of thinner starch pastes or casein pastes, and may be used in other than cigarette making machines, for example in wrapping machines.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. Pasting mechanism, particularly for cigarette making machines, in which a pair of intermeshing gears receive paste through an outlet of a paste reservoir and force the paste through an applying nozzle, and in which a rotary propellor is provided within the reservoir for forcing paste through the outlet directly into the spaces between the teeth of the gears, to prevent the formation of cavities or empty spaces in the paste supplied to the nozzle.

2. Pasting mechanism as claimed in Claim 1, wherein the rotary propellor is provided with radial blades so inclined as to force the paste through the outlet to the intermeshing gears.

3. Pasting mechanism as claimed in Claim 1 or 2, wherein an agitating device is provided within the paste receptacle to stir up the paste therein, said agitating device preferably being mounted on the

shaft of a rotary propellor.

4. Pasting mechanism as claimed in Claim 1, 2 or 3, wherein the gears are arranged to deliver an oversupply of paste  
5 into an orifice leading to the applying nozzle, and a relief valve, preferably adjustable, is provided in a by-pass leading from said orifice to the reservoir, to maintain a uniform pressure of paste  
10 supplied to the nozzle.

5. Pasting mechanism as claimed in Claim 4, wherein a valve additional to said relief valve is provided in said orifice for independently controlling the flow of  
15 paste to the nozzle.

6. Pasting mechanism as claimed in any of the preceding claims, wherein the nozzle is provided with a delivery slot and

is adjustable to change the position of said slot to vary the width of the stripe  
20 of paste applied by the nozzle.

7. Pasting mechanism as claimed in Claim 6, wherein said slot extends radially at the delivery end of the nozzle, and the nozzle is adjustable about its axis  
25 to position said slot vertically or in an inclined position to vary the width of the stripe of paste.

8. Pasting mechanism, particularly for cigarette making machines, constructed,  
30 arranged and operating substantially as hereinbefore described with reference to the accompanying drawings.

Dated this 21st day of June, 1935.

MARKS & CLERK.



[This Drawing is a reproduction of the Original on a reduced scale.]

